

Boomerang - TinySense series

Description

The Boomerang TinySense series is a wireless communication concept for monitoring and logging of environmental parameters in laboratories, pharmacies, health care centers and more.

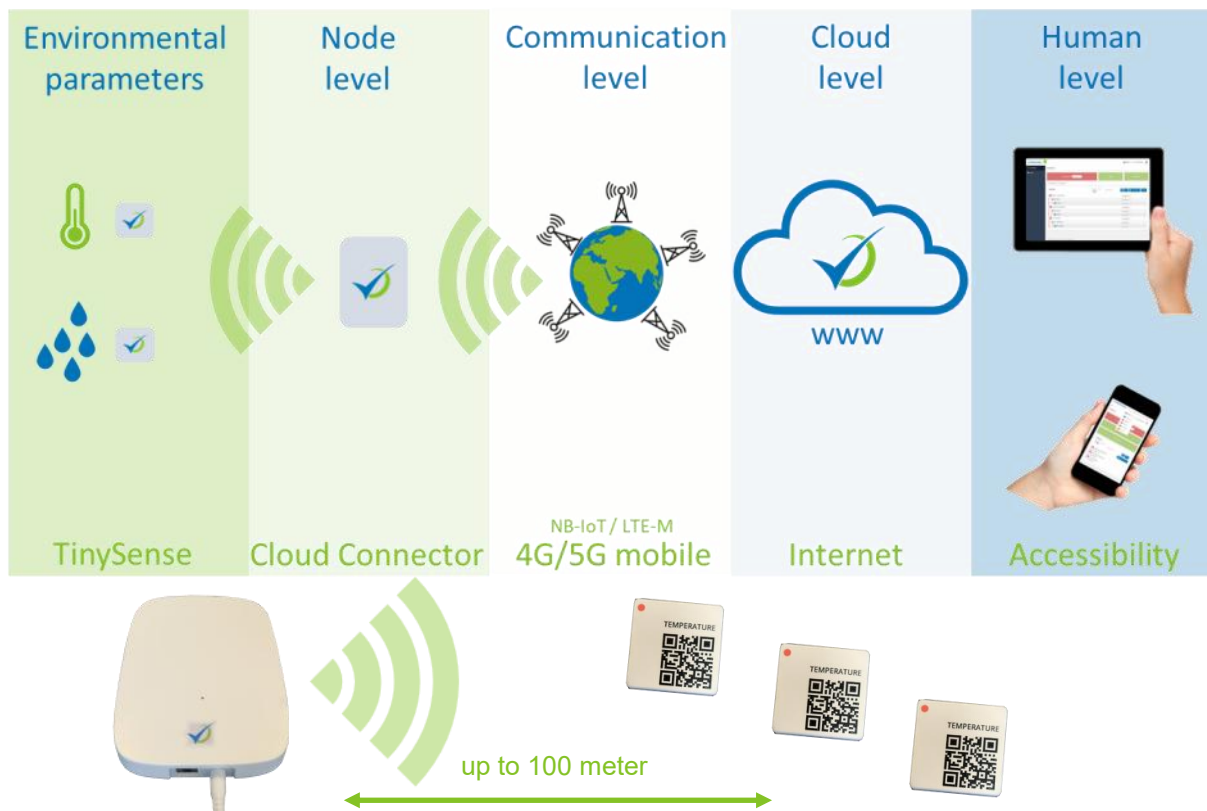
Thanks to an extremely easy and efficient configuration the Boomerang TinySense concept provides fast and flexible monitoring of refrigerators and freezers in many areas.

TinySense is a part of the IoT (Internet-of-Things) solution provided by Boomerang. The TinySense concept enables an efficient way of achieving continuous monitoring and logging, also on singular and remotely located measuring points, such as: refrigerators in pharmacy stores, in health care centers, cold storage etc.

The sensors are tiny in size (only 19×19×3.5 mm), wireless and battery powered. The sensors connects to the Internet and to the Boomerang cloud via one or several CloudConnectors (4G mobile and/or Ethernet).

Applications

- Cold storage
- Restaurants
- ...and much more
- Cold logistics
- Food producers
- Pharmacies
- Cold storage
- Health care centers
- Catering facilities



Part.no	Short description
BTINY-CC	TinySense Cloud Connector
BTINY001	TinySense Temperature sensor
BTINY003	TinySense Temperature sensor with Memory Buffer
BTINY004	TinySense CO2 sensor with Memory Buffer
BTINY005	TinySense Temperature node for external Pt100 sensor with Memory Buffer
BTINY006	TinySense Tactile touch
BTINY007	TinySense Door sensor (Open/Close)
BTINY008	TinySense Humidity & Temperature with Memory Buffer
BTINY009	TinySense Transport Logger
BTINY010	TinySense Water sensor (flood warning)



BTINY001 - *TinySense Temperature sensor*
BTINY003 - *TinySense Temperature w. Memory buffer*
Description

The BTINY001 & BTINY003 are wireless tiny temperature sensors for continuous monitoring and logging of temperatures between -30°C and $+50^{\circ}\text{C}$.

BTINY001 & BTINY003 allows for data transmission intervals from five (5) minutes up to 60 minutes, and log interval (sampling rate) down to one (1) minute.

Both BTINY001 and BTINY003 has a powerful battery to ensure a battery life (life time) up to 15 years.

BTINY003 with Memory Buffer

If the BTINY003 goes offline, i.e. loses connection to the CloudConnector and to Internet, it will start storing the temperature measurements locally. The local memory buffer size is 100 000 datapoints, i.e. with a one minute log interval the buffer can store data for more than two months before it starts to overwrite data.

Battery life

Estimated sensor (battery) lifetime: up to 15 years

There are several factors that affects the battery life of the TinySense products.

Surrounding Temperature is obviously one of them. At high temperatures the battery will have increased self-discharge, and at low temperatures the battery has less ability to deliver the total amount of its stored energy.

Radio transmission is the most energy-consuming activity and of course the transmitting interval has a large impact on battery life. Also the radio signal conditions are important, if the TinySense have a poor wireless connection to the CloudConnector (BTINY-CC), it will automatically increase its transmitting power ... and thus decrease the battery life. To ensure good wireless signalling conditions at longer distances using the Range Extender (BTINY-RANGEX) is a good idea.


BTINY008 - *Boomerang TinySense Humidity & Temp.*
Description

The BTINY008 is a wireless tiny sensor for continuous monitoring and logging of surrounding relative humidity and temperature. Wireless range up to 150 meters.

BTINY008 is IP40-rated, suitable for non-condensing environments. Applications like monitoring in pharmaceutical and medical storage, food storage and warehouse climate.


Technical data

Size (L×H×W)	19×19×3.5 mm
Battery life	Up to 15 years
Range	-30°C to $+50^{\circ}\text{C}$
Accuracy	Better than $\pm 0.5^{\circ}\text{C}$
Transmit interval	Min. 5 minutes
Log Interval	Down to 1 minute
Buffer memory (BTINY003)	Up to 100 000 logs
Wireless range	Up to 40 meter
Internet access	Cloud Connector

Estimated Battery Life


Please note: The battery lifetimes listed here are estimates and vary significantly from sensor to sensor depending on usage pattern, wireless coverage and other environmental variables.

Technical data

Size (L×H×W)	39×23×12 mm (9,3 g)
Battery (replaceable)	BR1632A (Lithium)
Battery life	Up to 15 years
Temperature	-20°C to $+50^{\circ}\text{C}$ @ $\pm 0.5^{\circ}\text{C}$
Humidity	0-90% RH @ $\pm 2\%$ RH
Transmit interval	Min. 5 minutes
Log Interval	Down to 1 minute
Buffer memory	Up to 31 days



BTINY004 - Boomerang TinySense Ambient CO₂, Humidity, Temperature & Barometric pressure

Description

The BTINY004 is a wireless sensor for continuous monitoring and logging of ambient CO₂, Humidity, Temperature and Barometric pressure. BTINY004 has a fixed log-interval of 5 minutes

Auto calibration:

Every sensor is factory calibrated at 400 ppm, and there is a settling period of 7 days before the CO₂ measurements are correct.

In order to function correctly the sensor must be exposed to typical background levels (400-450 ppm) at least once during a 7 day period. (eg. most buildings will drop quickly to background CO₂ levels when unoccupied during night and weekends.


 BTINY004 CO₂
Technical data

Size (L×H×W)	95×66×25 mm (116 gram)
Battery	2×AA (up to 10 years)
Carbon Dioxide, CO ₂	Range: 0 to 5000 ppm Accuracy: ±45ppm +3% of reading
Relative Humidity	Range: 10 to 95% (non condensing) Accuracy: ±3 %
Temperature	Range: 0 to 50°C Accuracy: ±1°C
Barometric pressure	Range: 500 to 1110 hPa (mbar) Accuracy: ±1 hPa (mbar)

BTINY005 - Boomerang TinySense Node for Pt100

Description

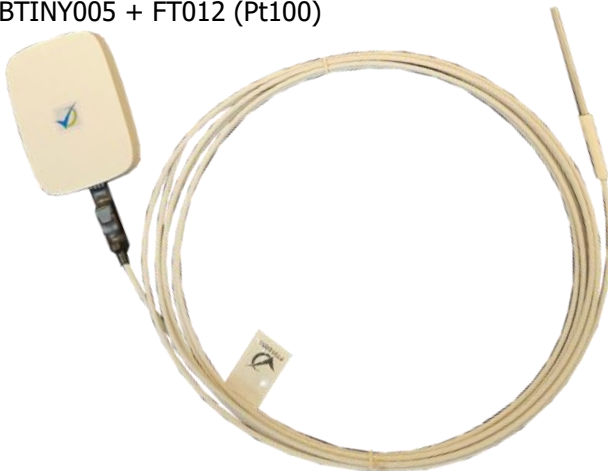
The BTINY005 is a wireless TinySense Node for external Pt100 temperature sensors, intended for continuous monitoring and logging of temperatures in refrigerators, freezers, ultra-low freezers and ovens/heating cabinets.

The BTINY005 has a memory buffer and the wireless range is up to 200 meters indoor.

BTINY005 is compatible with all existing Boomerang Pt100 sensors.

Technical data

Size (L×H×W)	95×66×25 mm (116 gram)
Battery	2×AA (up to 15 years)
Input	External 4-wire Pt100 sensors
Transmit interval	Min. 5 minutes
Log Interval	Down to 1 minute
Buffer memory	Up to 50 000 logs
Wireless range	Up to 200 meter
Internet access	Cloud Connector

BTINY005 + FT012 (Pt100)

**Available sensors
-200°C to +200°C**

Part no.	Probe	Temperature range
FT012	60 mm	-90°C to +200°C
FT004	600 mm	-200°C to +200°C
FT020	φ 2.1 mm (hermetic)	-60°C to +200°C
FT052	15 mm (flex)	-20°C to +200°C

BTINY006 - TinySense Tactile touch
Description

The BTINY006 is a TinySense wireless touch sensor that transmits a message to Boomerang every time it is pressed.

The BTINY006 comes in a mechanical housing that gives audible and tactile feedback to the user when the sensor is pressed.

Usage in Boomerang

Control point objects; you can sign off to the control point with the Tactile touch.

Temperature objects; the Tactile touch creates events in the log.

Technical data

Size (L×H×W) 26×26×5.9 mm (2 gram)

Battery life up to 15 years


BTINY007 - TinySense Door sensor
Description

The BTINY007 Door sensor monitors if doors or lids are open or closed based on the presence of a magnet. When the magnet is removed from the sensor Boomerang will detect "OPEN" and when the magnet is back close to the sensor Boomerang will detect "CLOSED".

Usage in Boomerang

In Boomerang 3 the Door sensors status "OPEN/ CLOSED" is displayed in a sensor dedicated graph.

Since Boomerang immediately detects a door opening event from a Door sensor, it is also possible to configure alarms and warnings if a door is kept open too long time. Eg. if a door has been open for five minutes Boomerang will trigger an alarm. *Functional description: A door opening event will start an Alarm Timer. The Alarm Timer is configurable. If the door closes the Timer will reset.*

The BTINY007 Door sensor battery life is up to 15 years. However, the BR3126A Lithium battery is replaceable.

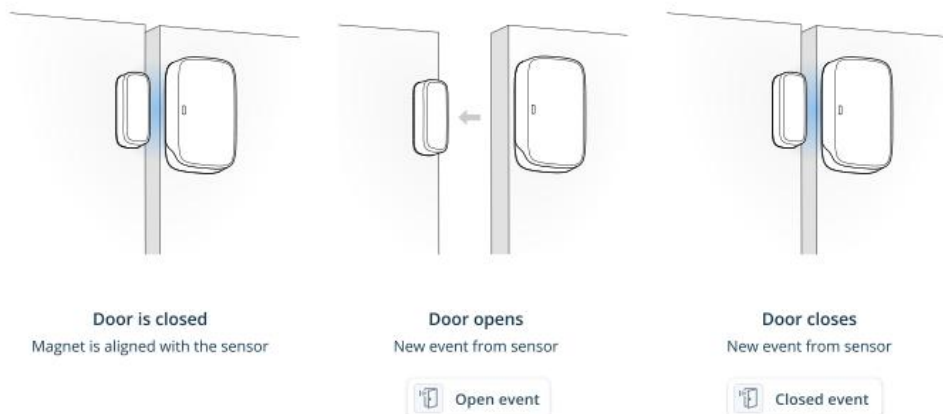
Technical data

Sensor Size (L×H×W) 39×23×12 mm (9 gram)

Magnet Size 25,5×10×9,5 mm (5 gram)

Battery life up to 15 years

Detection range up to 30 mm



BTINY009 - Boomerang TinySense Transport Logger
Description

The BTINY009 is a wireless Transport Logger with a start/stop button for continuous temperature monitoring during a transport or mission.

When starting or stopping a mission the BTINY009 must be within wireless range of a CloudConnector (BTINY-CC).


Technical data

Size (L×H×W)	70×70×7 mm
Start/stop transport/mission	Start/Stop push button
Battery life	Up to 15 years
Range	-30°C to +50°C
Accuracy	Better than ±0.5°C
Transmit interval	Min. 5 minutes
Log Interval	Down to 1 minute
Buffer memory (BTINY003)	Up to 100 000 logs
Wireless range	Up to 60 meter

BTINY010 - TinySense Water Sensor
Description

The BTINY010 TinySense wireless water sensor detects water in contact with the front of the sensor. If water is detected a message is wirelessly transmitted to the Boomerang cloud through a Cloud Connector.

The BTINY010 includes the water sensor with Range Extender and a adhesive textile strip to be fixed to the floor (surface).

Technical data

Size (L×H×W)	74×33×8 mm (4 gram)
Adhesive textile strip	74×33 mm
Battery life	up to 15 years
Wireless range	Up to 60 meter



BTINY-CC - Boomerang Cloud Connector

Description

The Cloud Connector connects the whole range of Boomerang TinySense sensors to the Internet and to the Boomerang Cloud. The Cloud Connector operates via 4G/LTE mobile networks and has cellular roaming within Europe (and other version for North America). Internet connection via Ethernet (PoE) is also available.

Seamless roaming over 4G / Ethernet, as well as between all BTINY sensors. Hundreds of sensors can connect to each Cloud Connector and numerous Cloud Connectors can be used for wireless coverage of larger areas.

The BTINY-CC is powered from the mains (230VAC) or via Power-over-Ethernet, PoE.

Technical data

Size (L×H×W) 153×114×30 mm (200 gram)

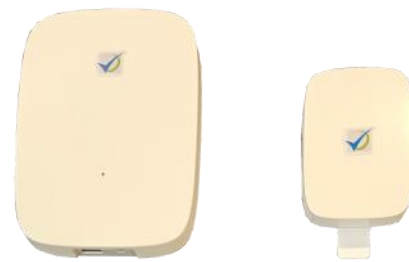
Roaming Europe & North America

SIM Internal eSIM

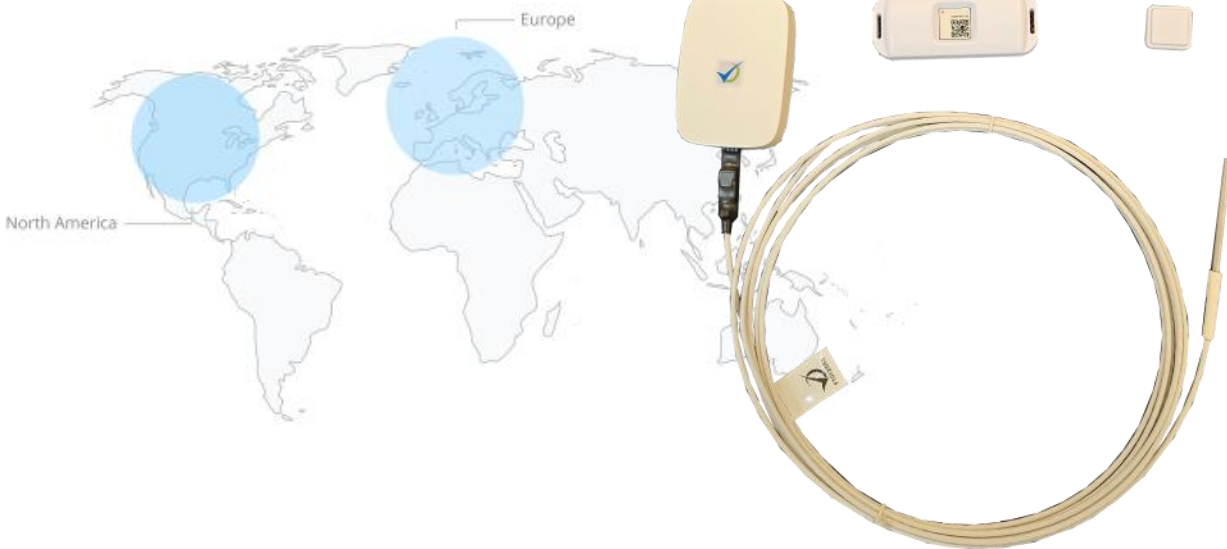
Transmit power < 100 mW

Operating cond. 0 to 70°C, 10 to 90% RH

Power consumption < 3W (average, but will vary)



Cloud Connector



General

- Boomerang TinySense and Cloud Connectors are CE, UKCA, WEEE and FCC certified
- TinySense uses wireless ISM band (EU) 868MHz., (US) 915MHz
- Typical wireless range: 40 m from BTINY-CC (up to 100m with Range Extender)

Wireless range always depends on surrounding environment, typically metal in walls and shelves affects the range. Magnetic power fields also affects.

On the other hand, free space or line-of-sight works well for the wireless range and distances up to hundred meters and more might be achievable, also the BTINY-RANGEX has good impact of the range (up to 4× the distance)

- Robust design, IP68

BTINY-RANGEX - TinySense Range Extender
Description

The TinySense Range Extender provides improved wireless range and battery life. (BTINY-RANGEX)

The Range Extender can improve the radio signal as much as four times (4×). The BTINY-RANGEX allows for installation directly on metal surfaces and is designed to work inside refrigerator and freezers.

Range extender


Note: the dot on the sensor shall be aligned with the dot on the BTINY-RANGEX

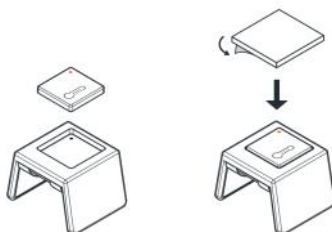


Note: Use the adhesive to attach the BTINY-RANGEX or use zip ties.


BTINY-SURFACE - TinySense Surface Range Extender
Description

The TinySense Surface Range Extender provides great thermal coupling between sensor and surface, and in addition improved wireless range and battery life. (BTINY-SURFACE)

The thermal conductivity of thermal pad is 1.6W/m·K



1. peel the protective film from the back of the sensor

2. the dot on the sensor shall be aligned with the dot on the BTINY-SURFACE

3. place the thermal pad with the sticky side on top of it



4. remove the second protective film from the thermal pad, flip it around and install it on a clean and dry surface